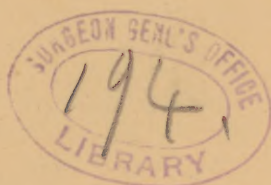


PRINCE (D.)

Partial forward dislocation  
of the head of the humerus xxxxxx





PARTIAL FORWARD DISLOCATION OF THE HEAD OF THE HUMERUS,  
OR BACKWARD DISPLACEMENT OF THE TENDON OF THE LONG  
HEAD OF THE BICEPS FLEXOR CUBITI—REPLACED AFTER THE  
LAPSE OF ONE MONTH. By DAVID PRINCE, M. D., of Jackson-  
ville, Ill.

[Reprinted from the *St. Louis Med. and Surg. Journal*, November, 1879.]

John Lidell Baker, of Barry, Ill., aged seventeen, fell from a loaded wagon which he was driving, and a hind wheel is supposed to have passed over his chest and shoulder. After a short period of insensibility he rode to the house and had liniment applied, not knowing that there had been a displacement.

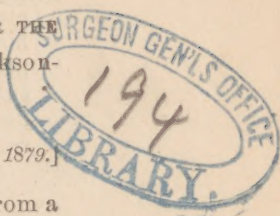
One month elapsed before the patient was examined with care, when it was discovered by his father, Dr. A. C. Baker, that the head of the humerus was too far forward. On careful examination it was found that the axis of the humerus corresponded with the forward position of the head of the humerus, making it plain that there had been no fracture.

The antero-posterior movement of the humerus was good, whether passive or by volition. The outward and upward movement in the direction of the contraction of the long head of the biceps and of the central fibers of the deltoid could be effected only to a limited extent. The greater or posterior tuberosity impinged upon the projection of the acromion, and refused to slide under it, as in the normal relations of the parts. The acromion process could be felt in its normal relation with the clavicle and with the acromion.

The diagnosis was made out to be displacement of the tendon of the long head of the biceps flexor cubiti, backward and outward over the great tuberosity, so as to lie across the glenoid cavity, crowding the head of the humerus forward, and restricting its occupancy to the anterior half of the glenoid cavity.

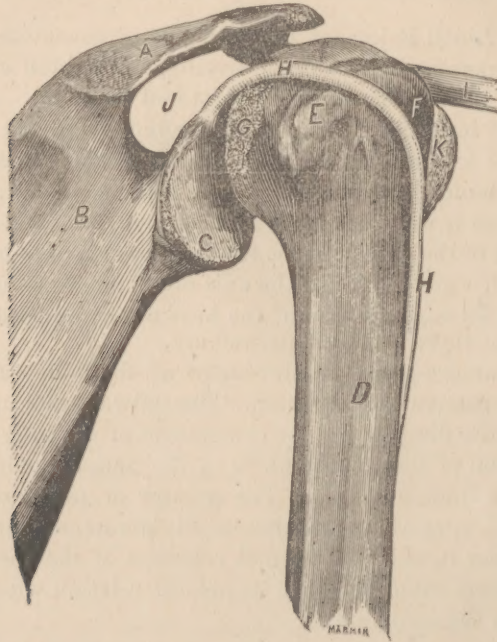
This implies that the insertions of the supra-spinatus and the infra-spinatus into the outer tuberosity of the humerus had been detached at the time of the injury. The detachment of the teres minor would permit the tendon to fall still lower, and increase the difficulty of reduction. The tendon being torn from its lodgment in the bicipital groove, and thrown over behind the head of the bone, would retain it in a forward position upon the anterior rim of the glenoid cavity.

The reason why this accident is rare (and by some thought impossible), is the breadth and firmness of the muscles, which





must be torn from their connection with the bone before the bicipital tendon can be displaced backward. The forward displacement of the tendon meets with less impediment from the subscapularis muscle, the detachment of which is necessary to the displacement, and is therefore more frequent, though extremely rare in surgical literature.



(A.) Acromion process. (B.) External face of the scapula. (C.) The articular surface or glenoid cavity of the scapula. (D.) The humerus. (E.) The insertion of the teres minor into the greater tuberosity. (F.) The insertion of the supra and infra spinatus, which are supposed to have been detached. (K.) The internal tuberosity—the groove for the tendon lying between the tuberosities. (H. H.) The displaced tendon. (L.) The clavicle disappearing behind the head of the humerus, and reappearing to be attached to the acromion process. (J.) Open space under the acromion.

The coracoid process is hidden by the articular projections of the scapula and the humerus.

Entertaining this theory of the case, the rational plan of reduction (under ether) was conceived to be:

- 1st. The flexion of the forearm.
- 2d. The outward rotation of the arm.
- 3d. Circumduction, first backward, then outward, upward, and lastly forward and downward.

The first round failed to bring the head of the humerus into position. The second round was successful. The prominence of

the head of the humerus disappeared, and the arm became capable of all its normal movements. The result justified the theory of the case. The treatment resulted in nearly complete absence of deformity, but after the lapse of several weeks a projection remained over the groove in the humerus in which the tendon normally lies, from which it is inferred that the tendon did not settle into its groove, but remained upon the deposit which is supposed to have filled the groove during the thirty days between the time of the injury and that of the reduction.

Besides this, the displaced tendon must have carried with it a portion of the capsular ligament through which it passes, together with the distal attachment of the supra and the infra-spinatus. The reduction of the tendon, with its accompanying mass of capsule and muscle, may still have failed of a complete restoration of the tendon to its proper groove.

The foregoing figure illustrates the conception of the case:

The rareness of the case makes it proper to make the following references to the literature of the subject. I have been aided by Dr. J. W. Freeman in making this collection of references:

Bryant (Surgery, first American Edition, pp. 900), in speaking of displacement of tendons, describes one of the peroneus longus, and further on says: "It is a question whether any other tendon can be similarly displaced; it has been said that the long tendon of the biceps flexor cubiti may be, but it has never been demonstrated."

Dr. Frank H. Hamilton (Fractures and Dislocations, first edition, pp. 567-70) quotes several authors in relation to partial dislocation of the head of the humerus, but he maintains that "such an injury as a traumatic accident has not yet been established and the anatomical structure of the joint renders its occurrence exceedingly improbable, if not impossible."

Dr. Hamilton refers to the case of Sir Astley Cooper as a sub-coracoid dislocation. In reference to the cases of Hairgrove and Dupuytren, he says it is quite probable that a majority of these accidents were examples of rupture or displacement of the long head of the biceps. He quotes John G. Smith from *Amer. Jour. Med. Sciences*, vol. XVI, p. 219, May, 1835; from *London Med. Gazette*, and Mr. Soden, same, vol. XXIX, p. 480; from *London Med. Gazette*, July, 1841, and Dr. Alfred Mercer, *Buffalo Med. Journal*, vol. XVI, p. 641, April, 1859, and says: "By a number of dissections it has been shown that the head of the humerus can be drawn upward and forward in its socket until it rests against the two processes and the craco-acromial ligament."

The conclusion of Dr. Hamilton would be unanswerable if it were not supposed that the subscapularis is detached for a forward displacement on the one hand, and on the other hand the detachment of the supra and the infra-spinatus for a backward displacement.

The case of Sir Astley Cooper (Cooper's Lectures on



tures and Dislocations near the Joints, Am. ed. 1844, p. 352) was one of anterior displacement of the long head of the biceps and a cut is given showing the result of dissection, the patient having some time afterward died from fracture of the skull. The case had been considered obscure until the dissection cleared up the obscurity.

Dr. Gross (Surgery Vol. II, p. 78, fifth ed., refers in general terms to ruptures and displacements of the long head of the biceps.

J. Mason Warren (Surgical Observations and Cases, p. 352,) quotes Malgaigne as relating a case of displacement of the long head of the biceps giving the appearance of partial dislocation.

Erichsen in his Surgery, Am. edition of 1878, Vol. I, p. 478, mentions the injury but gives no original observations.

The only case of outward displacement of the long tendon of the biceps to be found in the list of writers here quoted, is found in the chapter by W. H. Flower in Holmes' Surgery, (4 volumes) vol. II, p. 573.

In this case the long tendon of the biceps was found displaced to the outer side of the head of humerus, the preparation being deposited in the museum of St. George's Hospital. In this case the coracoid process was fractured and the deltoid torn so as to be transfixed by the head of the bone. From these quotations it appears that the displacement of the long head of the biceps outward, without extensive injury of the joint or of its surroundings, is of such rare occurrence as to be worthy of especial attention.

From the nature of the anatomy, this displacement cannot take place without laceration of the capsule. This, however, does not imply extensive injury. It is doubtful whether a complete dislocation of the head of the humerus can take place in any direction without rupture of the capsule, unless there is an unnatural relaxation of the capsular ligament. From the facility of the cicatrization of the rent capsule, not opened to the air, it is not to be wondered at, that subsequent dissection has failed to reveal the occurrence of laceration in those cases in which death has not speedily followed the injury. It may be said as a practical hint, that one's diagnosis of this and other cases of rare and obscure displacement, is not much aided by a historical knowledge of the surgery. It is chiefly by a knowledge of the anatomy that one must rely for a discernment of the relations of the parts in instances of obscure deformities. This case is reported therefore, not so much for any practical benefit to the profession as for making the literature of the subject more complete and to show from anatomical considerations that the displacement is rendered possible by supposing the detachment of some of the muscles which are intimately connected with the capsular ligament which must itself be torn or displaced along with the tendon which passes through it.



